

Griscom (John)

SYLLABUS

OF A

Select Course of Lectures,

ON

CHEMISTRY.

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DESIGNED FOR A FEMALE CLASS.  
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BY JOHN GRISCOM.

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1818.



# DEDICATION.

To the members of the late Female Class on  
Natural Philosophy :

SO trifling a publication as a "Syllabus" could not be considered as deserving a dedication, did it not opportunely furnish a medium through which I may be allowed to express the sentiments of sincere and cordial regard, with which, throughout the course of Philosophy we have just finished, your very decorous deportment, and your steady and lively attention, have inspired me. This attempt at furnishing a course of academic instruction in some of the most useful branches of Science and Philosophy to the Female Sex, has confirmed my opinion of the fitness and utility of such an enlargement of the benefits of education. If knowledge is of a social nature, and if an extended acquaintance with the objects and the laws of creation is worthy of pursuit, on account of its own intrinsic advantages to an intellectual being, then is there no good reason for withholding such advantages from one half of those whom Divine Providence has furnished with taste to enjoy, and capacity to understand.

That this endeavour to disseminate useful learning, may contribute, in some degree, to the real and permanent happiness of each of those who receive it, is the earnest wish of

Your affectionate Friend,

JOHN GRISCOM.

New-York Institution, }  
Second mo. 2, 1818. }

# Syllabus, &c.



## LECTURE I.



General objects of chemistry ; definition of chemical terms, both by verbal and experimental illustration, viz. Aggregation, combination, mixture, decomposition, molecule element, analysis, synthesis, concentration, condensation, comminution, filtration, lixiviation, lixivium, solution, solvent, saturation, precipitation, reduction, trituration, neutralization, calcination, incineration, infusion, maceration, deflagration, digestion, decrepitation, detonation, fulmination, ebullition, effervescence, efflorescence, deliquescence, dephlegmation, distillation, sublimation, edulcoration, exsiccation, hermetically, levigation, reagent, rectification, vitrification, petrification.

AFFINITY. Changes the properties of bodies ; its laws ; determines the productions of nature. Perfection of the chemical arts depends on an intimate acquaintance with it. Consideration of the combination of atoms gives exalted views of the DIVINE POWER AND BENEFICENCE.

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## LECTURE II.



Heat or Caloric. Influences the three different states of matter, solid, fluid, and aeriform. Matter cannot be destroyed. Caloric unconfined; impenetrable. No substance without a portion of it. Temperature defined; powerful agency of caloric in nature; most of the arts useless without it, cooking, soap-making, pottery, the metallurgic arts, &c. &c. Expansion and contraction of solids, fluids, and gasses; reference to the arts. Boiling illustrated in glass vessels. Influenced by pressure; pulse glass; water hammer; sensation not an accurate test of heat. Thermometer, its construction, various graduations and use. Pyrometer. Equilibrium of caloric. Cold only the absence of heat. Radiant caloric; its reflection best from metals; influenced by colour. Conduction of heat; important difference in the conducting power of different kinds of matter; application to clothing and household economy. Vaporization. Distillation performed. Apparatus of different kinds shown and described.



## LECTURE III.



Exceptions to expansion. Water densest at  $40^{\circ}$ . Beneficial effects in nature of this law; prevents lakes and deep waters from becoming solid in severe winters.

Clay an exception ; hence the arts of pottery. Specific heat, latent heat ; different capacities of bodies for heat ; of the same bodies in different states. Heat given out during the formation of ice, and condensations of solids and airs. Boiling and freezing made to exist together at the same temperature. Heat produced from various combinations ; of sulphuric acid and water ; lime and water ; furnishing an example of the phenomenon of slaking. Inflammation produced by mixing two cold fluids, and fluids and solids. Method of cooling liquors ; making ice cream ; producing ice in warm climates ; preserving meats, &c. Nature of heat ; various hypotheses. Sources of heat ; the sun ; chemical union, including combustion, friction, percussion, electricity, and galvanism.



## LECTURE IV.



Pneumatic Chemistry illustrated. Apparatus for gasses shown and explained. Air formerly considered as an element. Modern chemistry has greatly enlarged our knowledge of matter. The atmosphere proved to be a compound or mixture of oxygen and azote. Oxygen discovered by Priestly and Scheele. Different modes of obtaining it. Its interesting properties in supporting combustion, forming acids, in the respiration of animals, &c. stated and illustrated by experiments. Its extensive agency in the several kingdoms of nature. Its

combinations in general forming oxides and acids. Oxygenizement. Azote or nitrogen; how obtained; properties chiefly negative; uncertain whether it be a simple or compound substance. Atmosphere and its composition; how demonstrated; uniform in its proportions. Combustion; its theory; whence the heat; chimneys, stoves, patent and other lamps, furnaces of different kinds, forges, blow-pipes, &c.



## LECTURE V.



Hydrogen, its derivation and former appellations; by whom first accurately examined; how procured; its properties; inflammability, silent and explosive; its levity; used for inflating balloons; will not support combustion or animal life; produced by nature in stagnant water, &c. but not pure; used in fire works; a constituent of flame in most cases; produces musical tones when burnt in tubes.

Water, formerly regarded as one of the elements of matter; its composition proved by analysis and synthesis; how constituted; extensive use in the three kingdoms of nature; great solvent power; seldom found pure; cause of hardness in water; how remedied; mineral waters; their most common ingredients; valuable remedies; statement of the most celebrated mineral waters of America and Europe.

## LECTURE VI.



ALKALIES. A very useful class of bodies. Their general properties explained and shewn. *Ammonia* or volatile alkali; how produced; singular properties; use in medicine; its composition. *Potash*, or vegetable alkali; whence obtained. Pearl-ash, how made; use in domestic economy, in cooking; in the making of soft soap; its composition how shown; remarkable and curious properties of its base. *Soda* or Mineral Alkali, how procured. Theory of soap making. Process for making hard soap. Composition of soda. Earths, nine in number; some of them resemble alkalies; ascertained to be compounds. *Barytes* and *Strontites*, whence procured; their properties. *Lime*, how obtained; its chemical qualities give rise to its extensive use in agriculture, in masonry, in domestic economy, &c. *Alumine*; foundation of pottery and brick making. *Silex*, how distinguished; exists in great abundance in nature. Glass of different kinds, how made. *Magnesia*, a natural product; how obtained; used in medicine. Other earths but little known or used.



## LECTURE VII.



SULPHUR, its natural history; refined by sublimation. Combustibility; specific gravity; forms acids with ox-

xygen and hydrogen; found in numerous minerals and in animal substances; considered a simple substance.

PHOSPHORUS; never found native; whence and how obtained; interesting properties; great inflammability; emits an unusual share of light, especially when burned in oxygen; forms acids; combines with hydrogen and with lime, and forms interesting products.

CARBON; found pure in the diamond; history and uses of the diamond; nearly pure in charcoal; charcoal, how obtained; its properties and uses; forms an acid with oxygen: combines with hydrogen. Theory of gas lights, and flame in general.



## LECTURE VIII.



CHLORINE, how obtained; its colour and other properties; unites with hydrogen, and forms an acid.

IODINE, a new and curious substance; how obtained; its beautiful violet colour; forms acids with oxygen and hydrogen.

ACIDS in general; their nomenclature. *Sulphuric Acid*; how obtained; its weight; strong attraction for water producing great heat; use in the arts and domestic economy. *Sulphurous Acid*; its use in bleaching. *Nitric Acid*; its constitution; how obtained; its active powers, and use in the arts. *Phosphoric Acid*; how produced; assumes the appearance of glass.



## LECTURE IX.



*Carbonic Acid* ; its other appellations ; how procured ; its properties ; produced by combustion, by fermentation, and by the respiration of animals ; found in wells, vaults and cellars ; fatal effects without great caution ; exists in many mineral waters ; and in porter, cider, champagne, &c. Soda water, how prepared. *Muriatic Acid* formed of Chlorine and hydrogen ; how procured ; its chemical character ; uses in the arts. **SALTS**, their constitution and nomenclature. *Sulphates*, of soda, of lime, and of alumina ; their qualities and uses. *Nitrates* of potash and of ammonia ; their properties and uses. *Phosphates* of soda and lime. *Carbonates* of potash, of ammonia, of lime, (marble, chalk, &c.) of barytes, of magnesia. *Muriates* of soda, of ammonia ; their extensive uses in seasoning food, in preserving meats, and in various other domestic and useful arts. Chlorate of potash, remarkable qualities.



## LECTURE X.



**METALS**, their natural history ; how purified ; different relations to oxygen and acids ; chemical character and general use of platina, gold, silver, iron, copper,

lead, tin, zinc, mercury, bismuth, antimony,<sup>†</sup> arsenic, cobalt, and manganese.

METALLIC SALTS. *Sulphates* of copper, iron, and zinc. *Nitrates* of silver, copper, and mercury. *Carbonate* of lead. *Muriate* of gold, silver, iron, copper, tin, mercury, (calomel) cobalt, (sympathetic ink.)



## LECTURE XI.



VEGETABLES differ from minerals by having organization and life ; general process of germination and nutrition of plants ; plants composed of but few elements ; their proximate principles ; gum, starch, sugar, (how made and refined) gluten, oils fixed and volatile, essences and perfumes, camphor, resins, (varnishes) pitch, tar, copal, &c. myrrh, assafœtida, gum elastic, colouring matter. Tanning ; vegetable acids ; fermentation, BREAD MAKING, BAKING, AND CONFECTIONARY.

## ADVERTISEMENT.



☞ The course to commence on 5th day the 12th inst. at 10 o'clock, and to be continued on every third, fifth, and seventh day, at the same hour, A. M. till completed.

Terms of the course \$ 4, payable at the commencement, on receiving the ticket. The mothers and female guardians of those who shall be provided with tickets, are particularly invited to attend, without charge.

